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Identifying Service Gaps in Online Banking Services in Finland

Master's Thesis in Information Systems
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ABSTRACT

Subject: Information Systems	
Writer: Humyra Sadat	
Title: Identifying service gaps in online banking services in Finland	
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Abstract:

The purpose of this study is to observe the perceived customer satisfaction level of online banking services in Finland. Many things have changed over the last 20 years in the banking industry's service sectors as a result of digitalization. This study observes and attempts to understand the changing situation and what is the expectation/perception (actual service) towards Finnish banking services.

This thesis presents a literature review on the Finnish banking system, online banking services, and customers' variation over online banking services; these components help in analyzing the overall situation on a general level. This part contains a qualitative study from secondary data analysis. In the main, empirical research work, quantitative methods are utilized to analyse data collected from a questionnaire distributed to users of Finnish banks' online services.

The results show that there are significant changes over the years in online banking services and customers are optimistic about accepting changes. The customer satisfaction gap is modest to accomplish over time.

Keywords: Online service, Bank, Service gap, Customer Satisfaction, SERVQUAL (service quality gap model).	
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1 INTRODUCTION

The purpose of this thesis is to study the customer satisfaction of online banking services provided in Finland. The Finnish banking sector has experienced radical changes and developments in the last few decades, especially regarding customer service. Employees, as well as customers of the banks, need to be aware of the major changes in the work environment. Digitalization changes management and customer interaction processes of the banks radically. Banks in Finland could lose their customers if they are not properly guided about the changes taking place. According to a survey conducted in 2016, Finland has 281 credit operating institutions, including domestic deposit banks, investment banks, branches and subsidiaries of foreign deposit banks and credit institutions. Banks had a total of 1,063 branches in Finland at the end of 2016. Merging financial institutions have mostly shaped today's modern Finnish banking sector (TheBanks.eu, 2017). According to the World Economic Forum's Global Competitiveness Report, in 2017-2018 (TheBanks.eu, 2018) the financial market development in Finland scored 5.5 out of 7.0 and ranked 4th out of 138 analysed countries based on trustworthiness, while according to economics and confidence of the financial market, Finland scored 5.8 and ranked 7th place. OP Financial Group bank in Finland achieved an award as one of the best banks in the world in 2017 (GLOBAL FINANCE,2017). Despite the Finnish banking industry having a high reputation as a well-known financial industry, it received some negative reviews about customer service quality. Banks in Finland have experienced numerous challenges related to rigid legacy systems, new technologies, regulations, changes of troublesome models and restless customer service strategies to achieve justifiable growth. At the time of writing this thesis, more information about Finnish banks in the news seemed relevant to the topic of this thesis, such as “Bank customer satisfaction falls to 11-year low” (Yle, 2014), “Dissatisfaction with Bank Service Levels” (Yle, 2012)”, “Banks tighten belts on housing loans” (Yle, 2012), “European Systemic Risk Board issues a warning to Finland on household indebtedness” (Suomen Pankki, 2016). According to these motivational findings, the focus of this thesis is understanding the “Service gap in online service provided by banks in Finland” by analysing customer satisfaction levels regarding online banking services in Finland. To the best of the author’s knowledge, there is no past thesis reporting directly on the online banking services in Finland and customer satisfaction gap measurement. This thesis can be helpful

for those who are interested in the real situation of the customer satisfaction level in this context.

1.1 Research objectives

The main objective of this research is to find the service gap in online banking services provided by banks in Finland. The sub-objective of this research is to identify the parameters that impact the customer satisfaction level in online banking services in Finland.

1.2 Research Questions

In this thesis, answer to the following two research questions are sought.

Research Question 1: What are the gaps between customers' expectations and perceived online service quality provided by banks in Finland?

Research Question 2: What is the perception of online service quality delivered by the Finnish bank?

2 RESEARCH DESIGN

This thesis is a descriptive study based on the service quality SERVQUAL model. The main goal of this thesis is to measure the customer satisfaction level of online banking services provided by banks in Finland. To achieve the desired result this research is conducted both quantitative and qualitative methods. Through the qualitative method, data are collected from many published websites, articles, reports, and research papers mainly to develop an overview of the services provided by banks in Finland, its changing situations, users, methods, etc. The quantitative method has been used to obtain real information from real customers to know how they really (actual service) feel about online services provided by banks in Finland. The survey was conducted with a questionnaire (Self-completed, web-based questionnaire). Sixty people, ages ranging from 19 to 54, have participated in this survey.

2.1 Quantitative and Qualitative Method

In a broad aspect, qualitative research describes, interprets, and explains social reality in a medium of language. Quantitative research, on the other hand, explains these through the medium of mathematics (Beuving et al. 2014). According to Beuving (2014), quality and quantity are two logically independent dimensions of empirical research: one is about the qualities or properties or attributes of the object understudies – such as age or social class. The second is about the scale by which these properties are measured – such as several years, lower-middle-higher class.

Quantitative research is a scientific investigation that includes both experiments and other systematic methods that emphasize control and quantified measures of performance (Wayne, 2012). “Qualitative researchers are interested in understanding, exploring new ideas, and discovering patterns of behavior. Quantitative researchers are concerned with the development and testing of hypotheses and the generation of models and theories that explain behavior” (Wayne, 2012)”.

2.2 Mixed-Method

The mixed research method is a comparatively innovative idea that is still under progress. This method is a combination of quantitative and qualitative methods in the same paper to explain the proper state of the study. The mixed result method results in reflective research approaches due to its "methodological pluralism or eclecticism" (Johnson & Onwuegbuzie, 2009). This method trend is common in health and social sciences where researchers use both descriptive and statistical analysis to achieve reliable outcomes. In this research, both descriptive and statistical data are used to draw a proper scenario of the customer satisfaction level. Many researches are done on this mixed-method to measure customer satisfaction such as "Applying mixed methods to identify what drives quick-service restaurant's customer satisfaction at the unit-level" (Kimberle, Lisa & Ioana, 2015) whose main objective was to recognize downsides of the importance-performance method and develop an innovative approach that classifies customer satisfaction drivers for unit-level quick service restaurant (QSR).

In this research, qualitative and quantitative methods are used. However, the qualitative research data were collected from secondary sources and quantitative data was collected from primary sources. The methods were used together to answer the research questions.

The main interest of this research is to understand the service gap (expectation-actual service) among consumers in terms of receiving online banking services. The first task was to find and define online services. In this task, the qualitative method was used, and secondary data were was collected by desk research. Primary data were not used because a) plenty of relevant data are available online and b) accessing relevant personnel for such data was not possible.

The second task was to collect responses from customers who use defined services (online banking services) from the bank. As the research seeks to unearth the gap between expectation and experience, a numeric result is best suited for this purpose. For this reason, quantitative research was best suited for this task. Since, the purpose of the research is to find out 'what or how much is the service gap' rather than 'why there is a service gap', the quantitative method has been used.

2.3 Sample and Sampling Scale

For this thesis, eligible respondents are those who live in Finland and who have been using online banking services for at least one year. A large number of respondents belong in this category. It was not realistic to include all eligible respondents and collect answers from them. The online link of the questionnaire was sent to over 150 people using Facebook messenger and email. The questionnaire link was posted in four Facebook groups. When the survey was closed 60 responses were found.

In this thesis, five aspects of online service- tangibles, reliability, responsiveness, assurance, and empathy- have been considered in two dimensions. One is what customers expect from their digital banking services and another is what they are receiving from their bank at present. The gap between this expectation and actual (real) service perceived is the main result of the thesis. Both aspects are scored as follows:

- Score 7 for Strongly Agree
- Score 6 for Agree
- Score 5 for More or Less Agree
- Score 4 for Undecide
- Score 3 for More or Less Disagree
- Score 2 for Disagree
- Score 1 for Strongly Disagree

2.4 Homogeneity of Variances

For analysing the T-test within different variables in this thesis, Levene's hypothesis is used. Levene's test is one of the most used tools to test the homogeneity of variances. The pragmatic significance level for the F test was larger than .05 (the present significance level). The null hypothesis was not rejected, $F = .076$, $p = .79$ and the two population variances were equal (ASU, 2019).

Null Hypothesis: The null hypothesis for Levene's is that the variances are equal across all samples.

Alternate Hypothesis: The alternate hypothesis, is that the variances are not equal for at least one pair.

3 LITERATURE REVIEW

3.1 Finnish banks

The history of Finland's financial organization started back in the mid-18th century when Finland was under the rule of Sweden. After undergoing the rules of Russia and Sweden, Finland in 1809, decided to have own monetary system and conventional central bank. In 1875 Finland established its first commercial banks (Finnish banking, 2016).

At present, Finland has 17 banks. The total number of branches is 270. The Finnish banking industry is comprised of commercial banks, government banks, savings banks and branches of foreign banks. The Bank of Finland is the central bank and the national financial authority. Banks in Finland have double taxation agreements. According to the 2016 report, combined banking assets are 537.38 bln euro (TheBanks.eu, 2018).

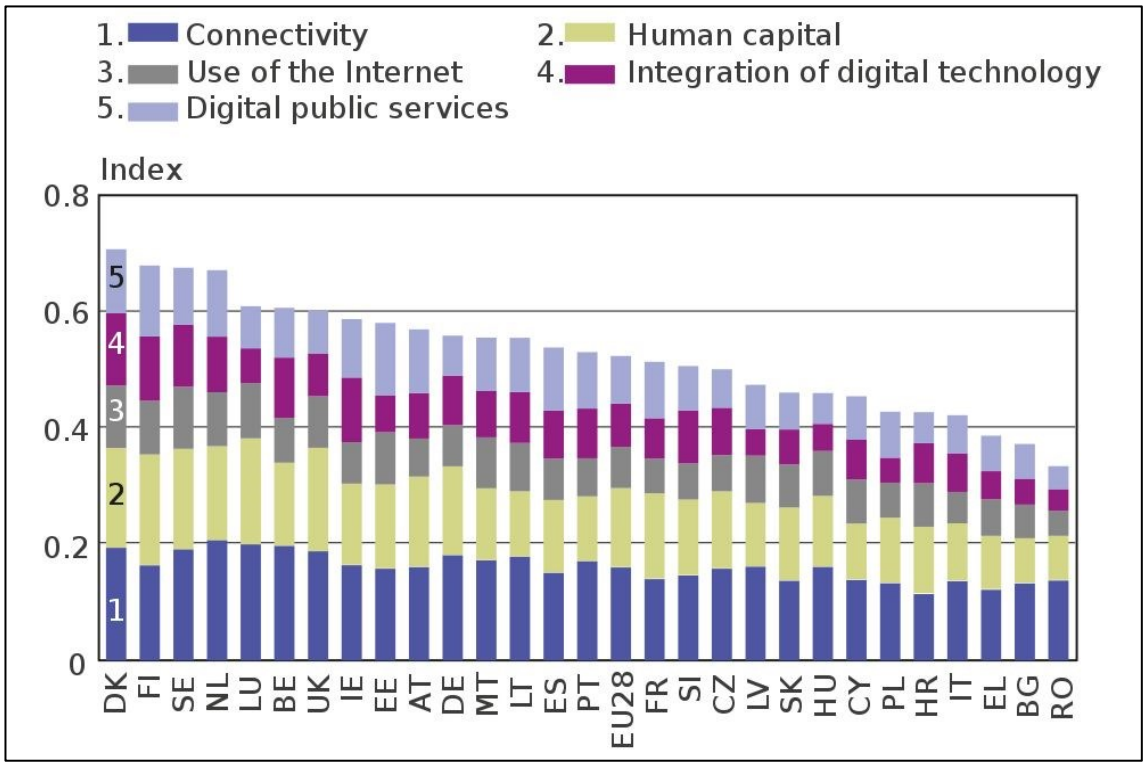
"The interest rates (per annum) are within the range 0.00 - 0.00 %, the overdraft rates (per annum) - 7.00 - 7.00 %, the annual costs - 0.00 - 216.00 EUR. 9 consumer loans offers from 9 banks operating in Finland are currently available. The consumer loan terms vary from one month to 25 years (300 months). The effective borrowing rates are within the range of 4.67 - 9.90 %" (Thebanks.eu, 2018)". According to Moody's (CFI, 2018), the Finnish banking system has been observing stable and moderate upswing in the domestic economy that supports the credit profiles of licensed banks in Finland.

Changes in the Finnish banking system in the past 20 years

Digitalization in the banking sector started in 1980 when home computers became available for consumer markets. According to a survey by Statistics Finland (Piirainen, 2016) during 2015, 98% of young people (25-34) and 26% old people (75-89) used internet banking. Ninety-five percent of the working population in Finland has internet banking presently. Finland ranks 2nd in the EU on the Desi index for digitalization. It is clearly stated that internet banking and mobile banking services are utilized by the major part of the population (Arnaboldi & Claeys, 2008). Digitalization has changed the banking sector permanently. It has lessened the price and hassle of the communication process with customers. Most of the branches are declining gradually because of daily banking processes, such as opening a bank account, transferring money, loan processing,

investment negotiations are now offered online. It is convenient for younger people to adopt the digitalization process in their life, but it creates somewhat difficulties for the older generation or for those who are not accustomed to the digitalization. It is also more expensive for current banks to maintain the old processes in their work.

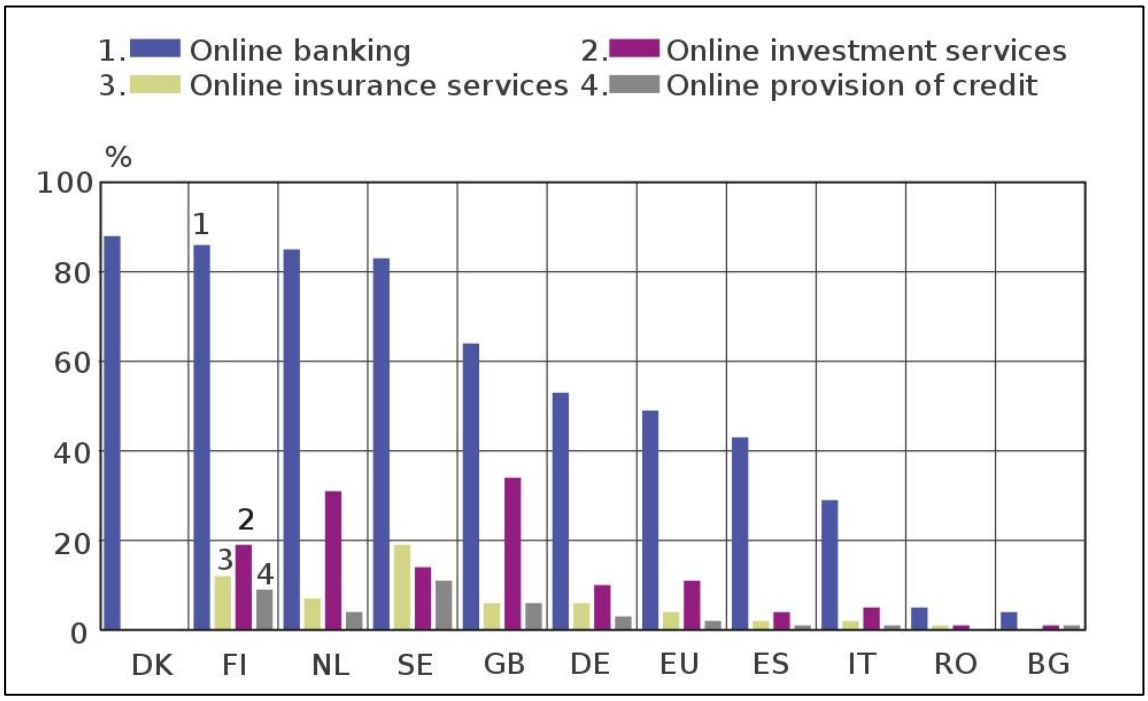
A new wave of technology is revolutionizing the way customers engage with their financial providers. From social to mobile capabilities, banks should rethink the way they do business to deliver a better customer experience and remain competitive. The recent introduction of open banking and the Payments Services Directive 2 (PSD2) regulation is accelerating this transformation by placing power in the hands of customers (Aalto, 2018). Banks must now consent customers to share their financial data, such as spending habits and regular payments, with authorized third-party providers. To navigate in this reality, banks must ensure their digital offering is fit for customers. People in Nordic countries are accustomed to using different types of online banking services. The declining use of cash illustrates that customers in these countries appreciate new and innovative payment methods.



Source: (Bank of Finland bulletin, 2018).

Figure 1: Finland ranks second in the EU on the Desi index for digitalization.

It can be seen in Figure 2 that Finland ranked second in the EU based on the Desi index for digitalization. Online banking is more common in Finland than some other EU countries. Accordign to Eurostat statistics, Finland, Denmark and Netherlands are the three most active European countries in terms of online banking (Finance Finland, 2019). In a survey conducted by 'Finance Finland' in 2017, ninety percent of the Finnish people pay their invoices mainly through internet banking (Finance Finland, 2017). Digitalization has created enormous prospects for any service provider institutions with new business models, as some service providers do not need to have any physical structure but can operate on the mobile and web-based platforms. For example, Atom Bank is a United Kingdom-based bank, solely working on a mobile platform. The bank does not have any physical branches for customers to visit but all operations are performed on mobile phones and a person can open a bank account with a few taps on the screen (Atom Bank, 2018).



Source: (Bank of Finland bulletin, 2018)

Figure 2: Online banking more common in Finland than in other EU countries.

The effects of digitalization on the financial sector can easily be correlated to the number of people using internet banking to pay their bills as it is the dominating factor on the average person's banking errands (Piirainen, 2016).

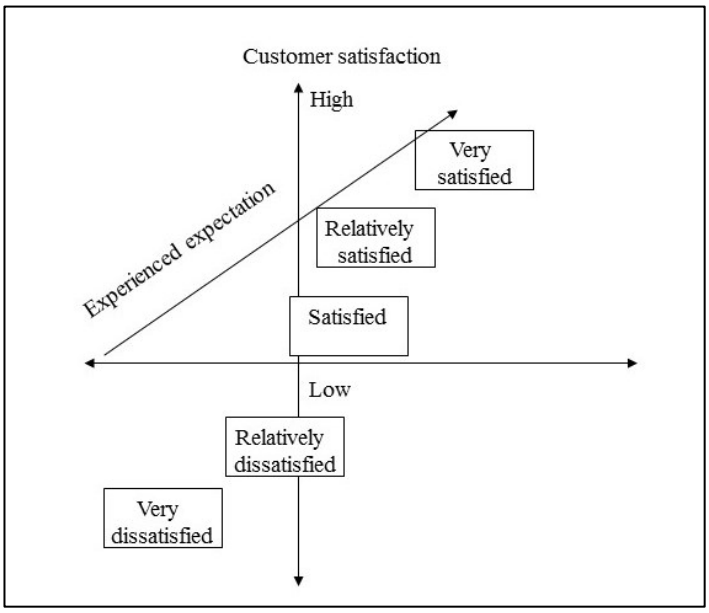
Future of Finnish banks

In 1982, the telephone was introduced in Finland. In 1984 PC banking (home computer plus modem), in 1996 internet-based banking and mobile phone banking, and in 1999, WAP-phone banking has started its journey (Andersen, Hyytinen & Snellman, 2000).

The future of the Finnish banking system has already started. Banking services are already better than ever, with smart digital and real-time services. Mobile Banking, BBVA Wallet and different types of apps (Apple Pay, Google Pay, and Samsung Pay), online banking, remote banking, and ATM banking are already practiced by customers. Banks are now cognizant to make the right framework to survive when competing with giants like Google. This digital-first platform framework is supported by four pillars – omnichannel banking, smart banking, modular banking, and open banking. Each of these four pillars is fundamental to success in the banking industry of the future (Backbase, 2018).

3.2 Customer satisfaction

"The term customer satisfaction and perception of quality are labels we use to summarize a set of observable actions related to the product or service" (Sureka, Sahayajenci and Subramani, 2015, p2). The concept of customer satisfaction is dynamic and comparative.



Source: (Khadka & Maharjan, 2017).

Figure 3: Customer satisfaction analysis model.

Satisfaction is an emotional response of customers. Customer service-centric companies focus on increasing customer satisfaction level which ultimately helps companies to gain customer loyalty. The quality of products and services has a direct impact on the level of customer satisfaction.

According to the customer relationship management triangle law, customer satisfaction is the gap between customer expectation and customer satisfaction (customer satisfaction = customer expectations - customer satisfaction). There are five stages of customer satisfaction: very dissatisfied, relatively dissatisfied, general satisfaction, relatively satisfied and very satisfied. Customer is satisfied when the service or product experience is better than expected. Customer is dissatisfied when the service or product experience is lower than expectation (Khadka & Maharjan, 2017).

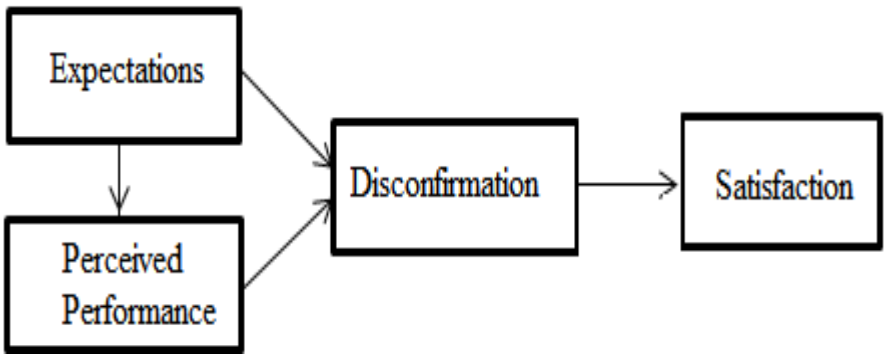
Perception varies from person to person because of individual psychological and physical aspects. Satisfaction is a delicate psychological state which changes very easily even though proper care has been taken. In short customer satisfaction is one complex realism. Finland's banks have already struggled a lot to build up trust, reliability among customers. Earlier it was easy to convey the message and to collect feedback from customers directly as there were so many branches everywhere. Digitalization has shirked customers face to face interaction. Though digitalization is meant to bring customers closer, sometimes it causes customers to feel distant. Many Nordic customers feel that live contact is more trustworthy than digital contact (EPSI Rating Group, 2016).

3.3 Theoretical Part

The Finnish banking industry is growing progressively because of its splendid service qualities. All financial service companies compete to attain techniques and modifications that differentiate one bank from another. Customer satisfaction is the core essence for financial institutions to triumph over competitors. To evaluate customer satisfaction many models have been developed. Different service institutions have different factors to appraise customer satisfaction. For banks, the factors can be specified as financial services, branch number and location, detailed information about the bank account, ATM location and numbers, online services, staff behavior, etc. To familiarize with relative theories and models for this thesis some models are discussed. These models are the Expectancy Disconfirmation model, American Customer Satisfaction Index (ACSI

model), European Consumer Satisfaction Index (ECSI model), The Service Quality or Gap model (SERVQUAL) and Unified Theory of Acceptance and Use of Technology 2(UTAUT2).

The Expectancy Disconfirmation model is one of the simplest customer satisfaction models which relates a customer's expectation based on the service's performance. This model suggests that any individual's expectation has three steps, which are confirmation (positive), negative confirmation and disconfirmation (more than expected). The confirmation stage refers to the state of a customer's satisfaction when services are as real as expected. Negative confirmation refers to the state when provided services are not as real as expected. A Customer's disconfirmation refers to the positive state when product performance exceeds expectations (Nuaimi, Mahmood, Mustapha & Jebur, 2016).



Source: (Nuaimi, Mahmood, Mustapha & Jebur,2016).

Figure 4: Expectancy Disconfirmation model.

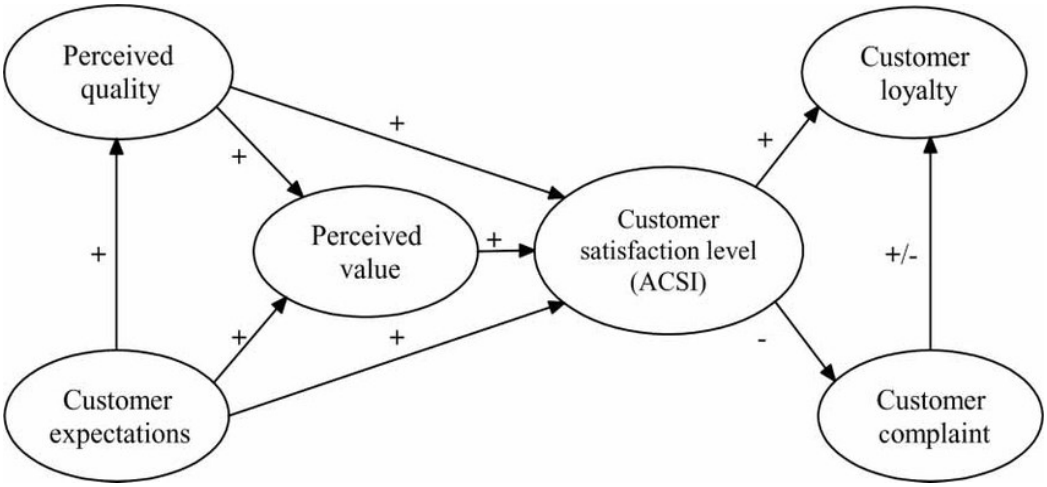
Since its invention, this model has been used in different researches in many organizations as this model is quite convenient to judge customer satisfaction based on customer expectation. The apparent service performance represents the standard of comparison to obtaining the result of disconfirmation. In this model, disconfirmation is considered as both independent and intervening variables measuring satisfaction. This model considers customer satisfaction as the sum of satisfaction gained from all the diverse characteristics of service or product and performance level of those products according to expectation. The disconfirmation model provides the best result for non-durable products (Grimmelikhuijsen & Porumbescu, 2017).

Many prior studies were done based on this model such as, “Customer Satisfaction in a High Technology Business-to-Business Context” (Hirsch, 2011). This research focused on the industrial customer satisfaction level (high technology business to business (B2B) industry). “Applying the disconfirmation model to brand purchasing” (Virani, 2016). In this study, Virani showed that if a customer has a clear idea about the brand name then it is easier for the customer to purchase products. After purchasing if the customer is not satisfied then she needs to be a proper explanation. The disconfirmation model was used by Virani to measure the customer satisfaction level in brand purchasing. “Testing the Expectancy Disconfirmation Model of Citizen Satisfaction with Local Government” (Gregg G. Van Ryzin, 2005). This study is the continuation of Van Ryzin’s study from 2004 where he tried to find out New York City’s citizens' satisfaction level about their local government based on a telephone survey. A recent survey methodology adds an online and self-administered survey and sensitivity of the results to two alternative measures of the disconfirmation model.

In 2017, Forero and Gómez conducted a study on the comparison of measurement models that are based on expectations and perceived performance. According to this study, three aspects were identified that need to be addressed- (a) measure the use of specific episodes summative events (Ariely & Carmon, 2000), (b) asking customer to evaluate exact service traits (such as, waiting time for appointment) rather than asking them about general features (such as, safety, attention, reliability etc.) (Li et al., 2015) and (c) use a direct measurement of customer satisfaction and perceived service performance to establish the discrepancy and the satisfaction (Matzler, Bailom, Hinterhuber, Renzl, & Pichler, 2004).

American customer satisfaction Index

Fronell developed the American Customer Satisfaction Index, ACSI model in 1996. This model is an economic indicator that assesses the quality of products and services produced and purchased in the United States. Figure 6, shows that ACSI is a cause-effect model that represents drivers of customer satisfaction (customer expectations, perceived quality, and perceived value), satisfaction and outcomes of satisfaction (customer complaints and customer loyalty, including customer retention and price tolerance) through a model presentation. Results of the ACSI model are strongly related to the number of indispensable indicators of macro and microeconomic performance.



Source: Hsu, Tsai & Wang (2012).

Figure 5: American Customer Satisfaction Index model

The micro-companies that enjoy higher customer satisfaction tend to have higher earnings than their competitors (Hsu, Tsai & Wang, 2012). Macro-level customer satisfaction is measured based on personal consumption and gross domestic product growth. The ACSI model has been popular since 1994 as a benchmark for measuring the satisfaction level of customers. Over time, this model has revealed some shortcomings which makes it less reliable. This model's result is influenced by word of mouth; there is no WOM/Recommendation Index. Moreover, the link that connects the expectation index to the 'Perceived value index' appears to be weak to connect to the customer satisfaction index.

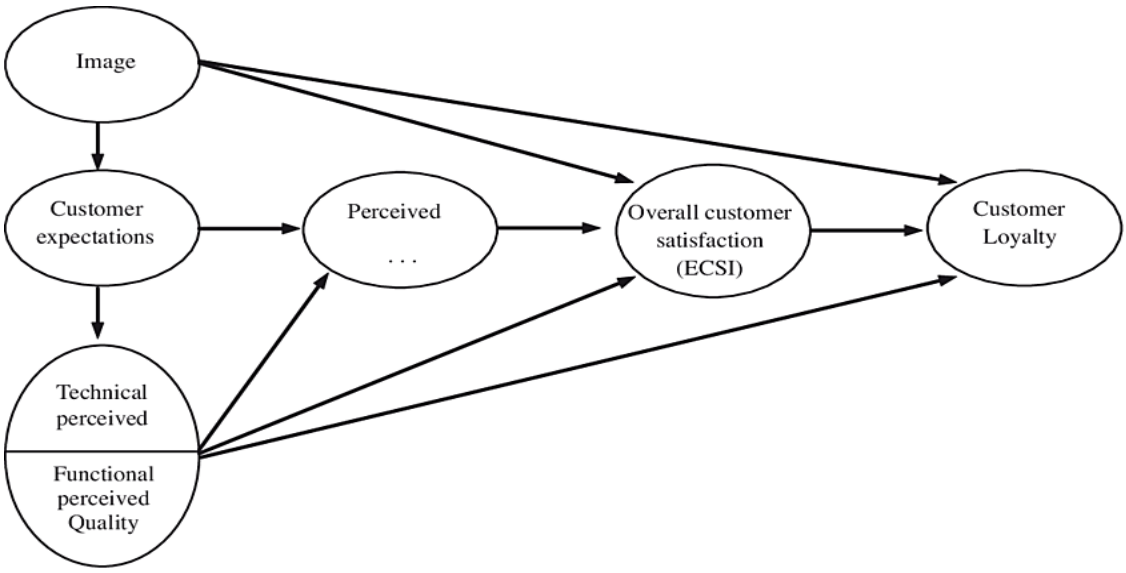
Some previous research papers and articles have been written based on the ACSI model to find out customer satisfaction. In 2016, Akanda & Dzeko conducted research on customers' perceptions of their satisfaction with the private banks in a developing country. This study is based on different private banks in Bangladesh mainly in Dhaka city. ACSI model has been used to measure the customer satisfaction level. This study also shows that customer satisfaction leads to customer loyalty. Another research conducted by Unyathanakorn & Rompho in 2014, on factors affecting customer satisfaction in online banking service, used the ACSI model. In this study, the ACSI model and TCSI (Thailand Customer Satisfaction Index) model was used to measure customer satisfaction levels according to the adaptation of the internet in commercial banks. "Measuring Customer Satisfaction with Service Quality Using American

Customer Satisfaction Model (ACSI Model)" (Angelova & Zekiri, 2011). In this research, the ACSI model is used to define customers perceive service quality of the Macedonian mobile telecommunication industry to measure the satisfaction level by using the three mobile telecom players, T-Mobile, ONE, and VIP.

This research aimed to apply the ACSI model in the context of service quality in the Macedonian mobile telecommunication industry to describe how customers perceive service quality and whether they are satisfied with services offered by T-Mobile, ONE, and VIP (three mobile telecoms players).

The European Consumer Satisfaction Index (ECSI)

The European Consumer Satisfaction Index (ECSI) another version of the ACSI model which is based on the Swedish Customer Satisfaction Barometer by Fronell 1992. The model has seven interrelated latent variables that are based on different theories and approaches in customer behavior. ECSI has seven variables along with six variables of ACSI, "corporate image". The model contains traditional variables and optional variables. Traditional variables are, perceived quality, expectations, perceived value, satisfaction index, and loyalty and additional variables are "image" and "complaints". Though in lots of personal and corporate research ECSI model has been used, it has some limitations which cannot avoid. In an employee-customer satisfaction chain, this model does not contemplate the service environment which ultimately avoids the cause and effect relationship between customer satisfaction and employee behavior.



Source: (Bayol, Foye, Tellier & Tenenhaus, 2000).

Figure 6: European Consumer Satisfaction Index (ECSI).

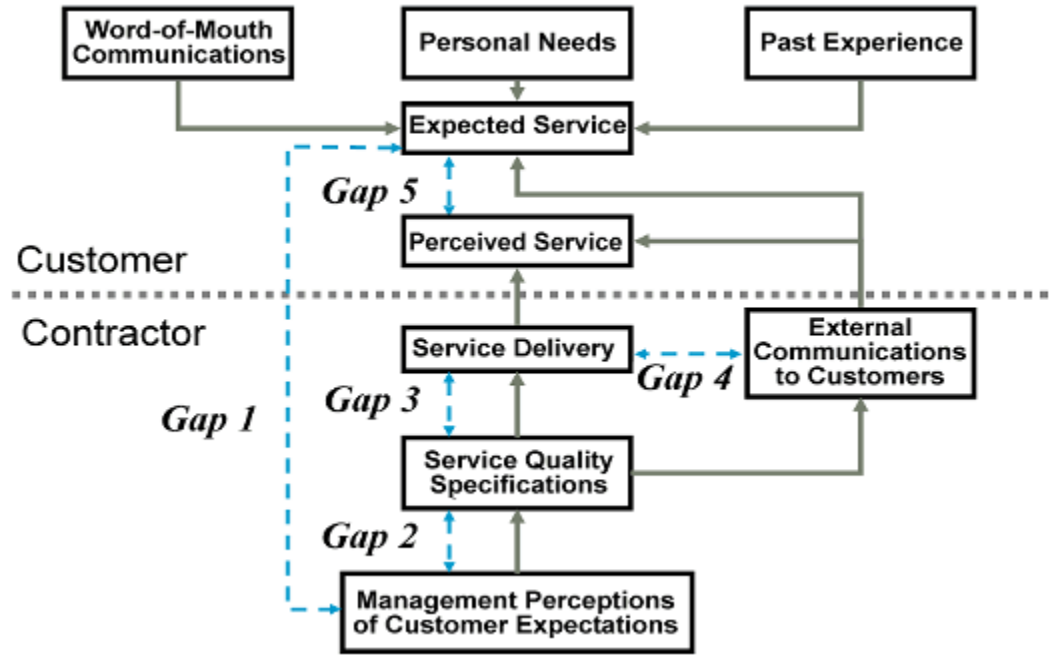
Much research has been done based on the ESCI model. Abhinav and Nisar have conducted a research on service quality and delivery in banking services from an Indian perspective in 2016. This research is based on Indian banks' employee where they found that the private and foreign bank employees are less satisfied compared to their counterparts working in PSU banks. Using the ESCI model this study showed that satisfaction level not only depends on the salary payment rate but also other activities, facilities, and the work environment. Another research by Kaveh, Mosavi & Ghaedi in 2011, where ECSI model was used, showed that customer perceived value influenced by technical dimension, image, price, and functional dimension. If the customer is satisfied, then the service provider has the trust and loyalty of customers.

The Service Quality or Gap model (SERVQUAL)

The main purpose of the Service Quality or Gap model (SERVQUAL) is to apply its dimensions in identifying the gap between customer expectations and perceptions (Peters, Pikkemaat, & Zeithaml et al, 2006). Vendors and customers may perceive the level of quality differently. The Service Quality or Gap model (SERVQUAL) is an indispensable model to measure service quality and customer satisfaction. This model is effective to help the company create and improve their relationships to their customers (Shahin and Samea, 2010).

The gap between customer satisfaction and perception happens when a company believes that they are providing the best quality services, but the customers expect something else. The gap model was developed by Bessy, Parasuraman, and Zeithaml in 1985. In 2003 this model has been described by Bitner and Zenithal. This model has been used in different types of research in services marketing for more than two decades. The Gap model deals with four specific gaps that ultimately lead to a fifth gap (the gap between customer expectations and perceived service).

The Gap model indicates poor quality of services delivered by an organization. This model suggests a gap in service quality is an obstacle to achieve quality. This model measures the knowledge gap, policy gap, delivery gap, communication gap, and customer gap.



Source: Duarte, Alves & Raposo (2012).

Figure 7: The Service Quality or Gap model (SERVQUAL)

The scale for measuring Service quality SERVQUAL model was developed by Zeithaml in 1988 to measure the quality of service on five identified quality dimensions. This scale mainly measures Gap (customers' expectations and perception) on a 22-scale item focusing, *Reliability, Responsiveness, Empathy,* and *Tangibles.*

The Customer gap: the difference between customer expectations and perceptions

Provider Gap 1: not knowing what customers expect;

Provider Gap 2: Not selecting the right service designs and standards;

Provider Gap 3: Not delivering to service designs and standards;

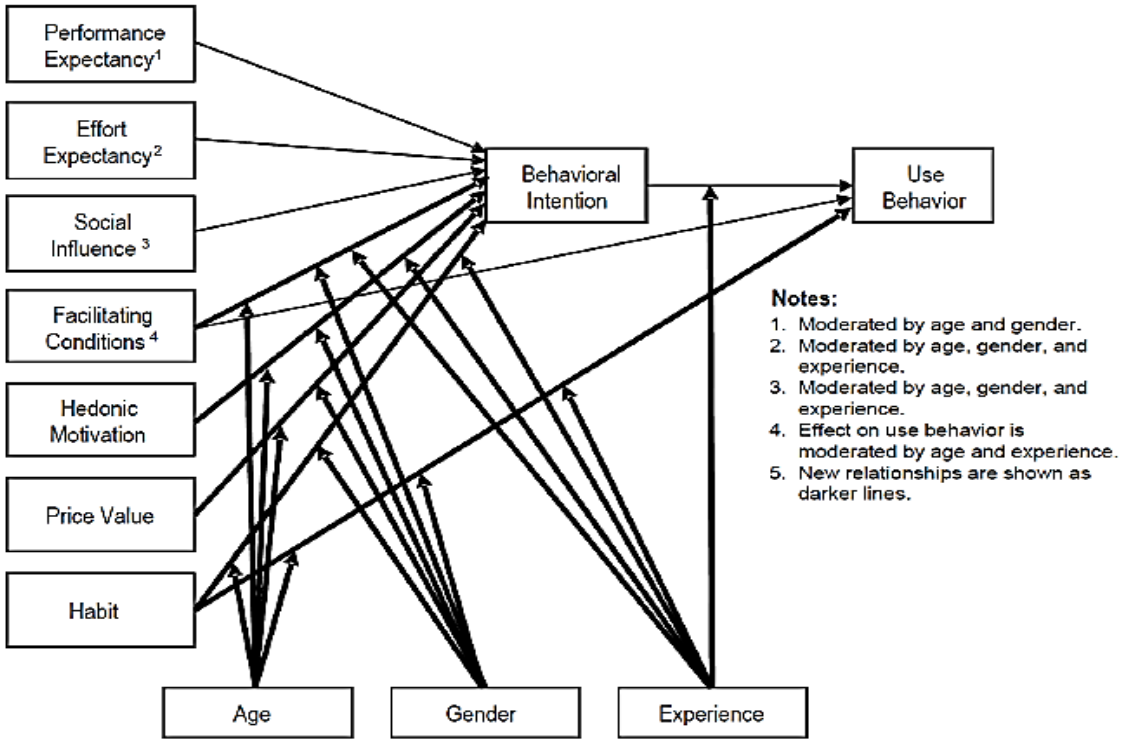
Provider Gap 4: Not matching performance to promises (Zeithaml et al, 2006).

SERVQUAL or Gap model is one of the most used models to judge customer satisfaction. This model brings out proper results from the service businesses, but this model is not appropriate for tangible product business (Hill and Alexander, 2006). The SERVQUAL model deals with an extensive range of numbers. Though this model has been developed to measure the gap between customer expectation and perception, this also measures

service quality, track customer expectation and satisfaction. This model only measures the functional aspects of the service process. This model is mostly used to justify the customer satisfaction level in different sectors. Much research has been published based on this model because it measures mostly all factors of customer satisfaction. One study was conducted on Indian's 200 private bank customers based on the GAP model by Anthonisamy, Prabaharan & Ramesh in 2011. It was found that empathy, reliability, and assurance have a positive impression to build up customer satisfaction.

Unified Theory of Acceptance and Use of Technology 2

UTAUT, The Unified Theory of Acceptance and Use of Technology was presented in 2003. Although it was widely accepted, an extension of it, UTAUT2 was presentedin 2012. It is based on review and consolidation of eight prominent theories to elucidate the behavior of information systems usage: TAM, TRA, MM (the motivational model),TPB, MPCU (the PC utilization model) (Thompson, Higgins, & Howell, 1991), IDT, SCT (the social cognitive theory) (Bandura, 1986) and TAM-TPB (an integrated model of technology acceptance and planned behavior (Taylor & Todd, 1995). The model is based on four theories; performance expectancy, effort expectancy, social influence and facilitating conditions. Though the UTAUT model is used in different researches it has some limitations (Negahban & Chung, 2014). Venkatesh et al (2012) developed the UTAUT2 model in 2012 which has extended and adapted the theory by adding hedonic motivation, price value and habit.



Source: (Molnar, Weerakkody, Haddadeh & Irani,2013).

Figure 8: United theory of acceptance and use of technology 2

Figure 8 explains that UTAUT2 model has seven constructions: (i) performance expectancy, (ii) effort expectancy, (iii) social influence, (iv) facilitating conditions, (v) hedonic motivation, (vi) price value, and (vii) habit (Venkatesh, Thong &Xu 2012). Three new theories (motivation, price, and habit) have been added to the UTAUT2 model. Hedonic motivation is a core predictor, price value is important as consumers pay the cost of the service and habit is the critical factor in technology context (Huang & Kao, 2015). UTAUT considers users' age, gender, and experience as silent voluntariness. Along with previous silent voluntariness, UTAUT2 improved the direct relationship between behavioral intention and facilitating conditions (Shao & Siponen, 2011).

Hameed and Khan in 2017 conducted a study on over 415 individuals aging over 55 years to know how elderly people are adapting to internet banking. Another study by Hashim and Hassan in 2015 based on UTAUT2 Model proposed a new model. They opine the new model can play a major role in accepting mobile banking in Malaysia. Gharaibeh, Arshad and Gharaibeh used the UTAUT2 model in their study in 2018. This study is based on bank services in Jordan to determine how customers are accepting mobile banking services there.

3.4 Internet Banking scenario

4,117,888,096 people are using the internet today and the number is increasing every day (internet live starts, 2019). The Internet has changed our lifestyle radically and has an impact on every aspect of life. One significant example is internet banking. Fifty-one percent of adults in Europe use internet banking. The number is increasing over the years since 2007 when it was only 25%. Internet banking is most popular within the population of 25 to 34 years old, of which 68% use the facility. There is a relationship between using internet banking and the level of education of the users. Seventy-seven percent of higher educated people use internet banking while only 24% of less-educated people use e-banking services (Eurostat, 2018). Among the members of EU, internet banking is most common in Denmark where 90% of people aging from 16 to 74 use internet banking. In the Netherlands, the percentage is 89% in the same age group. In the Nordic countries, Finland has 87% and Sweden has 86% rate of internet banking usage rate (Eurostat, 2018). The journey of internet banking in Finland started in 1996 and became more popular day by day. In 2014, Finland achieved 100% access to mobile phones or the internet at home. According to the World Bank collection of development indicators, Finland is a world leader in electronic banking. Online banking was introduced in 1996 in Finland and over time became a common system for many banks. In 2000, over 39.8% of retail banking in Finland was done through the internet (Trading economic, 2018). In 2016, Finland had 5,107,402 internet users (Internet live stats, 2019).

Social, economic and technological factors are the main influencers to build a strong electronic background in Finland. From the results of the Finnish Banker's Association, users age between 35 to 49 were using online banking regular in Finland.

In 2014, Finland has made and received 99.7% of digital payments according to the World Bank collection of development indicators. Finnish customers have made 80.77% of payments through the internet, and 21.92% through mobile in 2014 (Trading economic, 2018). Payments play a very important part in the Finnish banking sector. In one report, it is stated that Finnish banks earn 0.5 billion from payments which are 8% of total income and 19% of operating profit (Rehn, 2018).

Types of Online Payments in Finland

Finland has a great opportunity in online banking services. Almost 80% of Finnish people purchased products online and the total money they spent is around 1.2 to 1.6 billion euros which is 44% of total retail purchases. In 2015 Finnish people spent a total of 3.6 billion on retail products (Borgström, 2016). From one survey it is found that Finland has spent 33% of online money on goods shopping, which is 2.8 billion euros. Fifty percent of Finish people bought clothes, accessories, and shoes online. About 30% to 33% of people bought health products, electronics, and physical media products online. Finnish people are adopting online mobile payment applications slowly. About 34% of the payments were made via mobile payment application in 2017 and in 2016 the number was 27.43% (Finnish e-commerce, 2017). In 2017 88% of Finnish residents used the internet for daily purpose (Statistics Finaland, 2017). Throughout the time the number of internet users increased arbitrarily because of the easy mode of using the internet for different purposes. It is projected that within 2021 Finland will penetrate 89.45% of the total population (Statista, 2019).

PayPal

PayPal is an expedient way to transfer money which was founded by Max Levchin, Peter Thiel, Luke Nosek and Ken Howery in 1998 in America. This is most of the well-known and used a method of the payment system. Like other Nordic countries, Finland is not lagged to grab the advantage of PayPal. In 2017 28% of internet banking in Finland was done by PayPal (eMarketer, 2017).

Payment Methods Used for Digital Purchases Among Digital Buyers in Select Nordic Countries, Q2 2017
% of respondents

Denmark		Finland		Norway		Sweden	
Cards	94%	Internet banking	76%	Cards	85%	Cards	83%
Mobile pay	37%	Cards	56%	PayPal	43%	Invoice	49%
PayPal	20%	Invoice	33%	Invoice	29%	Internet banking	48%
Internet banking	12%	PayPal	28%	Vipps	24%	Swish	28%

Note: ages 15-74; in the past 3 months

Source: (eMarketer,2017).

Figure 9: Payment Methods Used for Digital Purchases

Figure 9 shows that in Finland 28% online purchases were made with PayPal in 2017. Norway had the highest (43%) PayPal user in 2017. Payment through PayPal is prompt, easy and secured. Payments are transacted through the users' existing account via debit or credit card. Payment through PayPal is prompt, easy and secured. The problem in dealing with PayPal is that the account fee and the chances of freezing the account anytime. The standard fee for PayPal accounts is 2.9% with 0.30 dollars for each transaction. There is an option for a monthly fee other than per transaction fee (PayPal, 2019). PayPal freezes the account to protect the account from fraud and to investigate if there are any unlawful activities.

Google Wallet

Google Pay is an online payment system developed by Google in 2015. In the initial stage, the name was android pay. This is a digital wallet platform where a user can pay without any contact. All the user needs is to unlock the mobile phone and hold it near the payment system equipment. The best part is that the user does not need to open an app for this. Recently Nordea bank has adopted Google Pay service. In Google Pay, credit fee is 2.9%, Debit fee, Bank transfer fee is free. Money withdrawer speed is Up to 1-3 business days, transfer limit is 9999 dollars. The most special features are integration with other Google services. Edenred Finland, Nordea, Revolut and Danske Bank are offering Google Pay service (Google, 2019).

Amazon Payment

Amazon payment is another popular payment method that started in 2007. Customers can purchase products using US-based website Amazon.com accounts with Visa or MasterCard. Amazon Payment charges the same as PayPal for all domestic transactions. To send products outside Amazon Payment charges 3.9% +0.30 per transaction. This payment system is best for companies that are just starting, and looking for online-only credit and debit card processing (Rezvee, 2016). Amazon Payment is risky for those company business owners who would like to receive PayPal and cryptocurrencies (Valuepenguin, 2019). In short, Amazon Payments is a better option for only card processors.

Stripe

Stripe is a third-party payment processor that enables merchants to accept credit card payments. Using Stripe Payments, one can accept a wide variety of payment options—credit cards, wallets, and international currencies—both in-person and online. Stripe can integrate with over 300 tools and products. Stripe payment processing is charged on a flat-rate fee structure: 2.9% + $0.30 for every credit card transaction and 2.7% + $0.30 for every in-person credit card transaction (stripe, 2019).

Dwolla

Dwolla was founded in 2010 by Ben Milne and Shane Neuerburg in headquarters in Des Moines, Lowa. Dwolla is another payment network just like Amazon Payments and PayPal which focuses on, customer management, better bank transfer transactions, and account verification. Dwolla allows users to transfer money through an internet-connected device at the lowest possible cost (Cash Money Life,2018). Dwolla transfers over one 1 million dollars daily. Unlike PayPal and Amazon Payment, Dwolla transfers money directly to the bank other than using debit or credit cards. In this payment system buying fee is free and the selling fee is free under 10 dollars or to 10 dollars. Over 10 dollars it costs 0.25 dollars extra. Sending money to friends and family over this payment system is free if sending/receiving under $10, $0.25 if receiving over $10 (Cash Money Life,2018). Goat, Bluezebra sports and RentMonitor are prominent clients of Dwolla (FinancesOnline, 2018).

WePay

WePay is an online payment processor which is founded in 2008 a merchant account alternative, started as a competitor to services like the stripe. The prime work of WePay is to provide online platforms to collect payments from donors and customers (for example, GoFundMe.com). This website consents every website to collect payments from participating customers via ACH bank transfers and credit cards (Rezvee, 2016). The service is free of charge. WePay does not charge per transaction on its websites. Its recent pricing system is 2.9% + 0.30 dollars for credit card payments or 1%+ 0.30 dollars for direct payments from bank accounts. Besides, with this service, WePay provides a 15-dollars chargeback fee (FundRazr,2019).

2Checkout

2checkout was invented in 2000 to serve as a third-party payment processor for e-commerce suppliers. It is an integration process that allows users to have PayPal and credit card systems. 2CO works as a similar process of Stripe and PayPal and competes for the same market share. 2CO payments are accepted in 87 currencies and settlements are possible in 27 currencies. This is available in 15 languages spanning over 200 counties. Without sign in up on the website, customers can make purchases using eight accepted payment methods. 2CO offers two different pricing options based on the transactions. No monthly fees or setup plans are charged in this payment option. There is two pricing option for 2Checkout, simple pricing: 2.9% + 30 euro per successful transaction (US rates varies according to country) and volume pricing system is available by-quote (Financesonline, 2018).

Visa Europe

Visa Europe is another payment technology that is operated and owned by the bank members. It provides services in 37 countries across Europe. Visa Europe uses the forefront of technology to create the structure and services for online services for all the consumers, business and governments (VISA,2018). Almost 80% of its business in on debit cards. There are around 470m Visa cards all over Europe. One euro in every 6.75 euro is spent via Visa cards. Total spending via Visa cards in Europe is 200 billion euro (VISA, 2018). In Finland 64.2% payment is made by VISA, 60% by MasterCard and 40% by VISA Electron (Ecommerce News, 2018).

Mobile payment

Mobile payment is a merchant micropayment system that is built on NFC and GSM architecture components. NFC is a short-range communication system which allows a possible integration with POS (point of sale) to process payment for merchants and customer perspective. In 2010 Liu et al proposed a trust model for mobile payment to build up users' security. Yang et al in 2010 made a general framework of online mobile payment and invented a new pattern of mobile payment which promotes stratified cascading and postponement representatives to make a stable and dependable platform. It is a unified payment platform that proposed a solution for problems of cross-bank connections. This framework mobile payment becomes more effective, secure and

reasonable. Mobile payment methods are mainly classified according to the payment basis. Mobile payments are distinguished naturally by transaction, technology, transaction, location (remote or proximity), size and funding mechanism. Based on location mobile payment are classified into two types; remote mobile payments and proximity mobile payments. Different technologies such as SMS (a mobile application or mobile browser), barcodes or an interface which is contactless payment technology, NFC, tags or contactless stickers are used for mobile payment. Micro and macro payments specified the size of the mobile payment. Account-based, pre-paid, post pain, real-time, credit card, smart card, M pos, P2P payments, and mobile wallet specified the funding mechanism of mobile payments. Contactless payment is a wireless method of payments where users wave their credit or debit card, smartwatch or mobile phone over the payment point. The mobile application confirms online purchases through the mobile app instead of using a credit card number or PIN list. The mobile wallet is a virtual wallet mobile app which can hold debit or credit card, money and loyalty cards (Raina, 2014).

The mobile payment system needs a smartphone application that will manage the card information and accept the payment. Users can use this application to make both contactless payments at stores and online stores. Debit or Credit cards are required to make this application work. iPhone users have own payment systems, ApplePay and android users can make the payment without opening any specific application other than only active the NFC option. Mobile payment is one of the popular terms of online payment. Especially, shopping is progressively being done by mobile payment. Figure 11 shows that in 2016, 18.38% payments were made on mobile devices and in 2017 it was 23.7%. These online payments are mainly made by mobile phone other than tablets or other devices. Through tablet, 8.26% purchases were done (Oksanen, 2017).

	Desktop	Tablet	Mobile
2012	97,57%	1,49%	0,94%
2013	92,72%	4,60%	2,68%
2014	86,84%	8%	5,16%
2015	81,86%	8,81%	9,33%
2016	72,66%	8,96%	18,38%
1.1.2017-24.5.2017	68,06%	8,26%	23,67%

Figure 10: Developments in mobile payments from 2012-24.5.2017

Source: (Oksanen, 2017).

In December 2013, Danske Bank first, applies the mobile bank system to transfer money easily. The app name was MobilePay and users can transfer 1000 euro per day. 100000 app was downloaded within a few months. MacDonald's first used this mobile payment system for merchant payment services. Now Nordea bank, K city market, and Prisma also have this mobile payment option. Some names of mobile payment operator in Finland are AKTIA WALLET, APPLE PAY AND APPLE WALLET, FITBIT PAY, GARMIN PAY, GOOGLE PAY, GOOGLE PAY, MASTERPASSA, MOBIILIMAKSU, NORDEA WALLET, PIVO, S-MOBIILI, MobilePay, SAMSUNG PAY, and SIIRTO. The best mobile payment in Finland is Pivo, MobilePAy, and Mobiilimaksu (DANISH PAYMENTS COUNCIL, 2014).

The mobile payments system is receiving acceptance over other conventional payment systems because user data remains hidden in the phone instead of being conveying information to the merchant. According to the survey of Paytrail (QVIK, 2017), 40% of Finnish citizens use mobile or tablet to purchase and 65% of these purchases are done by mobile payment apps. People already consider mobile as a payment instrument. In Finland more than half dozens of payment companies to adopt Apple Pay in their service system.

PSD2

European banks are currently undergoing significant changes that are driven by the new trend in mobile banking. PSD2 or revised payment service directive is a revised

alternative to mobile banking that allows third-party payment providers access to customers' bank accounts. PSD2 enables customers to manage their finances by using third-party providers who have direct and secure access to bank accounts' API (application programming interface). PSD2 has created a disturbance in the financial services market where banks are no longer competing with other banks, but rather with any financial services that have the capabilities to translate the provided APIs into user-friendly web and mobile applications such as PayPal. By implementing open source regulations and trends, the European Commission is aiming to improve innovation, strengthen customer protection and improve the security of internet payment and accounts within the EU and EEA (Evry, 2019).

PSD2 has initiated a new payment system that exchanged from an EU/EEA currency — applies mostly to customers with noneuro accounts. Through PSD2 now users can send money to the beneficiary within one day (Manner, 2018). The aim of the PSD2 is to protect consumers from online payment problems, promote and initiative online and mobile payments through open banking and launch safe cross-border European Payment. Major facilities of PSD2 is this payment system is that its open API which helps non-banks to enter the financial market without having heavy infrastructure and compliance.

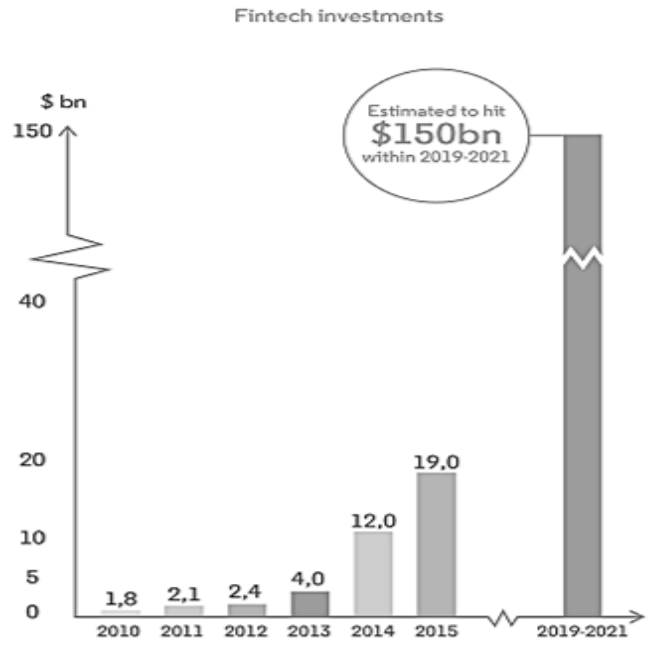


Figure 11: Changing European financial market

Source: (EVRY, 2019).

Figure 12 shows that the European financial market has changed radically after 2015. PSD2 has not only created disturbances in the financial market but also created two new players in the financial market, called PISP or Payment Initiation Service Provider and AISP or Account Information Service Provider. The number of financial investors is also increasing because of PSD2. PISP focuses on initiating payment on behalf of the user such as money transfer and payment of bills. Meanwhile, AISP focuses on creating analyses of user behavior and creating reports based on analytics (Evry, 2019).

4 ANALYSIS

4.1 Demography of respondents

Gender: Sixty percent of the respondents are female and 40% are male.

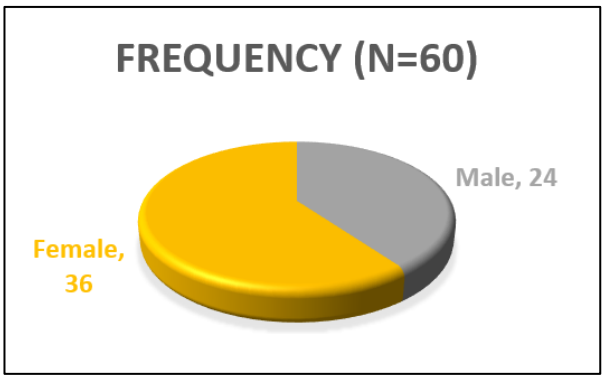


Figure 12: Male and female respondents

Age: About 74% of the respondents are from the age group of 19 – 29 years. About 15.25% of the respondents belong to age group 30 and respondents aging over 40 are about 10% of total respondents.

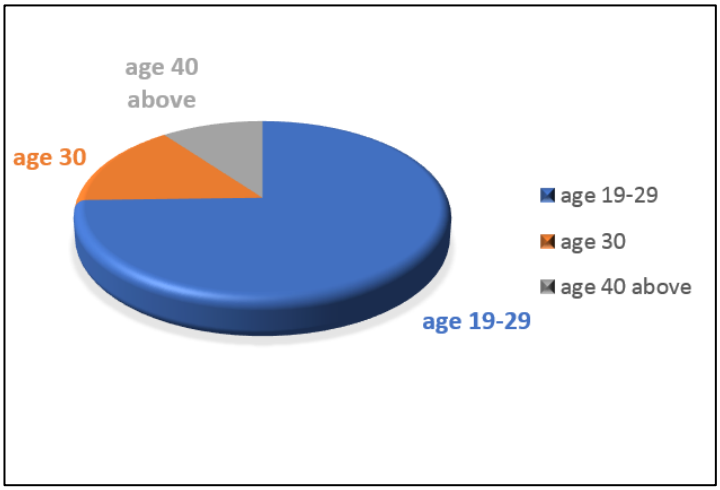


Figure 13: Male and Female age category

Online bank usage duration: Most of the respondents (which is 41.67%) have used banking services for 1-3years. Respondents who have used online banking for less than one year are 8.33% of the total population and 11.67% have used online banking for 4-5 years and 38.33% have used online banking for more than 5 years.

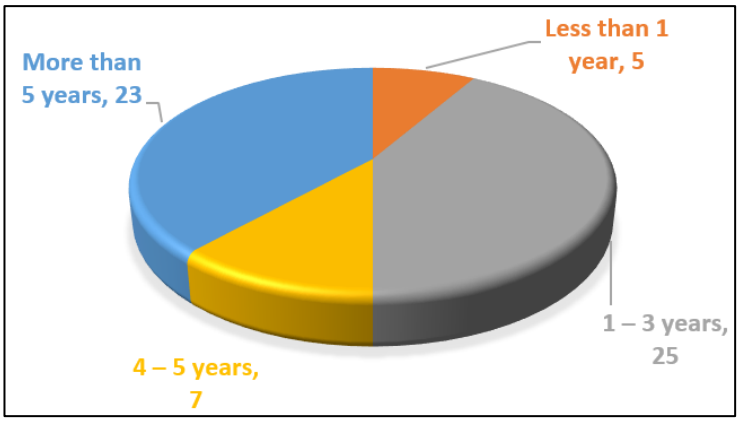


Figure 14: Online bank usage duration

In figure 14, it shows that age group 19-29 and age group 30 are mostly involved in online banking services in recent time (Less than one year and 1 – 3 years). It is also shown that only one respondent did not provide the age.

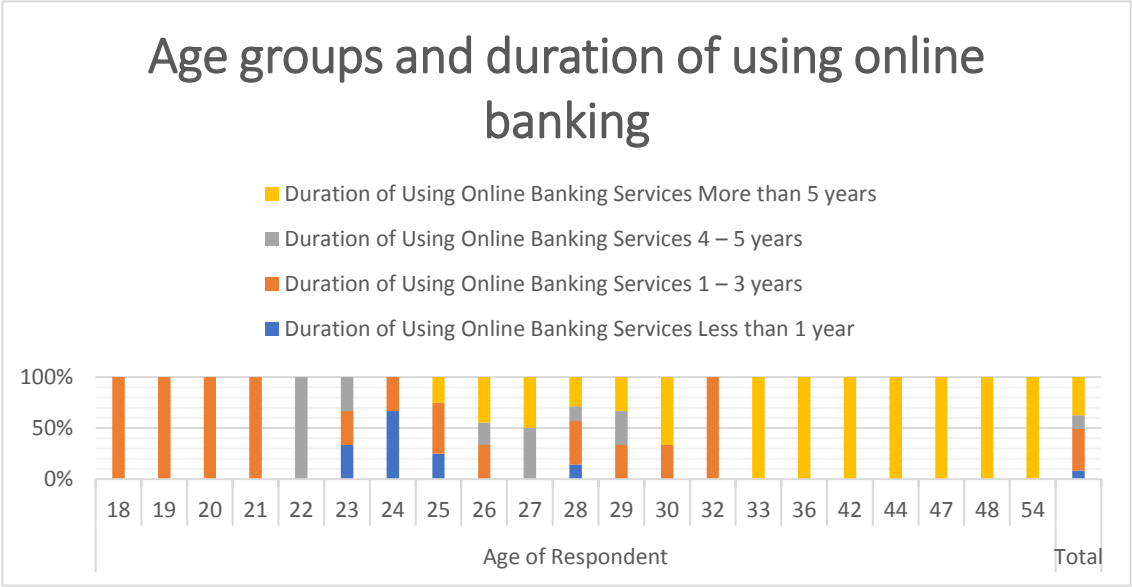


Figure 15: Age groups and duration of using online banking

Figure 15 also shows that Nordea Pankki Suomi has the highest number of users which is 41.67%. Users of Osuuspankki (OP) and S-Pankki both are 23.33%, Danske Bank is 16.67%, Aktia Pankki and Säästöpankki both are 10%, Ålandsbanken is 6.67%, Handelsbanken is1.67%, and other banks have 11.67%. POP Pankki has 0% of respondents from this survey. From the survey, it is found that 21 respondents' primary bank is Nordea Pankki Suomi which is highest in number. Osuuspankki (OP) is the

primary bank of 12 respondent which is the second-highest in number. We have only 50 responses from the question of the primary bank name.

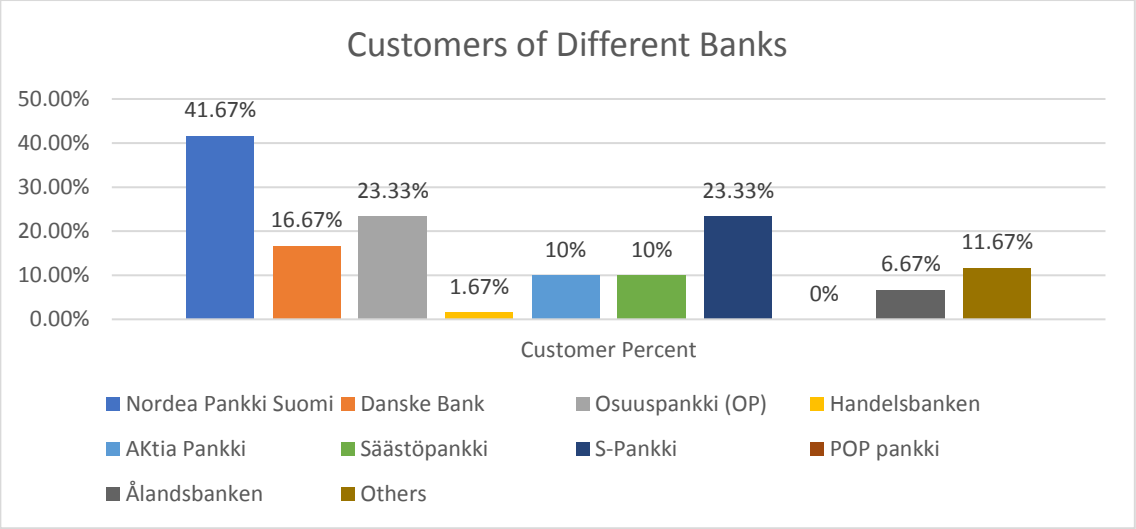


Figure 16: Total Customers percentage

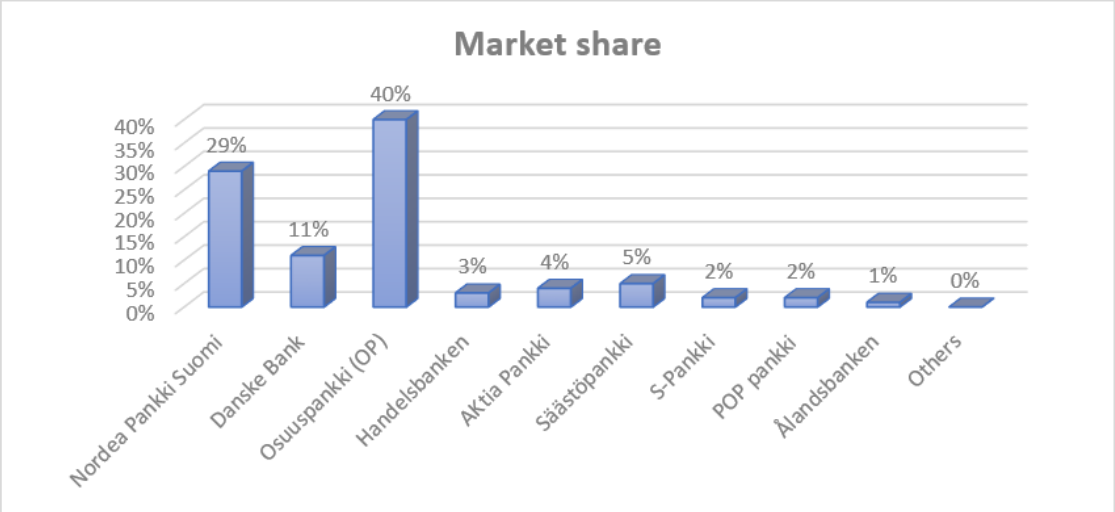


Figure 17: Market share based on Finland's housing loans to households in Finland
Source: (Suomen Pankki, Finlands Bank, 2019)

The market share of banks represents how many customers are using the services from that specific bank. From survey it is shown that 42% of customers use Nordea Pankki Suomi and it has 29% market share, 24% customers use Osuuspankki (OP) where bank has 40% market share, 10% customers use Säästöpankki and this bank as 5% market share, 8% customers use S-Pankki and this bank has 5% market share, 6% customer use Danske Bank where bank has 11% market share, 4% customers use Ålandsbanken and they have 1% market share and Aktia Pankki, 1% and it has 4% of market share and customers use 1% Handelsbanken as their primary bank and have 3% market share. The

customer percentage does not properly represent the market share. The highest market share belongs to Osuuspankki but the highest customers percentage we got from Nordea Pankki. Bank share and customer's online banking percentages are not reliable, this can be a result of having mostly young respondents in the survey and they prefer Nordea Pankki Suomi.

Using Time	**n**	**Percent**
Less than 10 times	38	63.33%
11 – 30 times	20	33.33%
More than 30 times	2	3.34%
Using Mode	**n**	**Percent**
Mobile phone	55	91.67%
Tablet	4	6.67%
Laptop/desktop computer	36	60%
Others	0	0%

Table 1: Using time and Using mode

Table 1 shows that 63.33% of respondents use less than 10 times, 33.33% of respondents use 11-30% and 3.34% of respondents use more than 30 times online banking services in a week through website/mobile app. Table 1 also shows 91.67% of respondents use the mobile phone, 6.67% of respondents use the tablet, 60% of respondents use laptop/desktop for online banking services.

Mobile phone * Duration of Using Online Banking Services Crosstabulation						
		Duration of Using Online Banking Services				
		Less than 1 year	1 – 3 years	4 – 5 years	Over 5 years	Total
Mobile phone	yes	5	24	6	18	53
Total		5	24	6	18	53

Table 2: Mobile phone user and using duration of online banking services

Table 2 shows that 5 respondents use online banking services less than 1 year, 24 respondents use online banking services 1-3 years, 6 respondents use online banking services 4-5 years and 18 respondents use online banking services more than 5 years

through mobile phone. Out of 60 respondents, 53 respondents use mobile phone for online banking services.

Tablet * Duration of Using Online Banking Services Crosstabulation				
Count				
		Duration of Using Online Banking Services		Total
		1 – 3 years	More than 5 years	
Tablet	yes	2	1	3
Total		2	1	3

Table 3: Tablet user and using duration of online banking services.

Table 3 shows that 2 respondents use online banking services 1-3 years and 1 respondent uses online banking services for more than 5 years through tablet. Only 3 respondents use tablets for online banking services.

Laptop/desktop computer * Duration of Using Online Banking Services Crosstabulation						
		Duration of Using Online Banking Services				Total
		Less than 1 year	1 – 3 years	4 – 5 years	Over 5 years	
Laptop/desktop computer	yes	1	15	5	13	34
Total		1	15	5	13	34

Table 4: Laptop/desktop computer user and duration of using online banking services.

Table 4 shows that 1 respondent uses online banking services less than 1 year, 15 respondents use online banking services 1-3 years, 5 respondents online banking services use 4-5 years and 13 respondents use online banking services more than 5 years through laptop/desktop computer. In total, 34 respondents use laptop/desktop computers for online banking services. Mobile is the most used medium for online banking services in today's time in Finland.

	Mean and standard deviation of SERVQUAL		
Descriptive Statistics			
	N	Mean	Std. Dev.
TangibilityEM	54	6.5648	0.4688
TangibleAM	54	5.838	0.85941
ReliabilityEM	54	6.4926	0.5323
ReliabilityAM	54	5.7528	0.84966
ResponsivenessEM	54	6.4444	0.52455
ResponsivenessAM	54	5.6852	0.91655
EmpathyEM	54	6.2074	0.74829
EmpathyAM	54	5.5593	0.86035
AssuranceEM	54	6.5833	0.51166
AssuranceAM	54	5.9846	0.8846
Valid N (listwise)	54		

Table 5: Mean and standard deviation of SERVQUAL

In table 5, it shows the mean results of expectation and perception of tangibility, reliability, responsiveness, empathy, and assurance. From this table, it is shown that most of the respondents mostly agreed to have good banking services and respondents more or less agreed to satisfy on the services they are having now.

4.2 Reliability measurement of the questionnaire

The reliability test has been applied to examine the internal consistency of the service quality (SERVQUAL) variables in the questionnaire. Coefficient alpha was calculated to assess the internal consistency of the statements. In order to accept the reliability measure, the coefficient value should be more than 0.7 for all the dimensions. Table 6 shows that the reliability was more than 0.7 for all the service perception dimension. So, it can be concluded that all the statements in the questionnaire are highly reliable.

SERVQUAL dimension	No. of items	Cronbach's Alpha Value for Perceived Service Quality
Tangibility	4	0.808
Reliability	5	0.0776
Responsiveness	4	0.752
Assurance	5	0.836
Empathy	4	0.820

Table 6: SERVQUAL dimension with Cronbach's Alpha

4.3 Overall Gap analysis of service dimensions

After analysing, the difference between the means of expectations and perception of different service dimensions has been derived. The results show that there are gaps in all dimensions.

Tangibility						Reliability					
	Expected Mean	Std. Deviation	Actual Mean	Mean Gap	N		Expected Mean	Std. Deviation	Actual Mean	Mean Gap	N
Q1	6.7407	0.67810	6.1296	0.61111	54	Q5	6.7963	0.40653	5.9811	0.81516	54
Q2	6.2407	0.86734	5.7963	0.44444	54	Q6	6.5741	0.68960	5.7547	0.81936	54
Q3	6.8333	0.46581	5.6852	1.14815	54	Q7	6.3704	0.75975	5.3774	0.99301	54
Q4	6.4444	0.76889	5.7407	0.70370	54	Q8	6.5741	0.71643	6.0000	0.57407	54
						Q9	6.1481	1.15591	5.6981	0.45003	54

Responsiveness						Empathy					
	Expected Mean	Std. Deviation	Actual Mean	Mean Gap	N		Expected Mean	Std. Deviation	Actual Mean	Mean Gap	N
Q10	6.3774	0.83727	5.8148	0.56254	53	Q14	5.9444	1.29464	5.2963	0.64815	54
Q11	6.3019	0.82240	5.5370	0.76485	53	Q15	6.3333	0.84675	5.7222	0.61111	54
Q12	6.6038	0.59935	5.8889	0.71488	53	Q16	6.2037	1.10538	5.2407	0.96296	54
Q13	6.4528	0.66697	5.5000	0.95283	53	Q17	6.2778	0.97935	5.7407	0.53704	54
						Q18	6.2778	0.89899	5.7963	0.48148	54

Assurance					
	Expected Mean	Std. Deviation	Actual Mean	Mean Gap	N
Q19	6.5556	0.60397	5.9245	0.63103	54
Q20	6.6852	0.72226	6.3585	0.32669	54
Q21	6.5000	0.69364	6.0000	0.50000	54
Q22	6.5926	0.68731	5.9057	0.68693	54

Table 7: Gap analysis of service dimensions

4.4 Independent t test- Comparative analysis of service quality gap among males and females

The Independent Samples *t* Test compares the means of two independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different.

4.4.1 Tangibility

Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Tangibility EM	Equal variances assumed	6.572	.013	3.657	52	.001	.42756	.11690
	Equal variances not assumed			4.168	45.004	.000	.42756	.10258
Tangibility AM	Equal variances assumed	7.307	.009	.420	52	.676	.10085	.23989
	Equal variances not assumed			.388	32.559	.701	.10085	.26002

Table 8: Tangibility and Levene's test

Expected- The p value of the Levene's test is 0.013, which is very small, so the null of Levene's test is rejected and conclude that the variance in Expected Tangibility between males and females are different.

The Sig. (2-Tailed) value in our example is 0.000. This value is less than .05. Because of this, we can conclude that there is a statistically significant difference between the mean number of the expected tangibility of male and female groups.

Actual-Actual mean of Tangibility, the p value of the Levene's test is 0.009, which is very small, so the null of Levene's test is rejected and conclude that the variance in Actual Tangibility of males is significantly different than that of females.

The Sig. (2-Tailed) value in our example is 0.701. This value is higher than .05. Because of this, we can conclude that population means are equal and there are no differences between the two groups.

4.4.2 Reliability

Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Reliability EM	Equal variances assumed	2.669	.108	1.453	52	.152	.21193	.14590
	Equal variances not assumed			1.569	51.866	.123	.21193	.13506
Reliability AM	Equal variances assumed	.000	.984	.612	52	.543	.14489	.23672
	Equal variances not assumed			.612	45.153	.544	.14489	.23694

Table 9: Reliability and Levene's test

Expected- The p value of the Levene's test is 0.108, which is very small, so the null of Levene's test is rejected and concludes that the variance in the Expected Reliability of males is significantly different than that of females.

The Sig. (2-Tailed) value in our example is 0.123. This value is less than .05. Because of this, we can conclude that there is a statistically significant difference between the mean number of expected reliabilities of male and female groups.

Actual- The p value of the Levene's test is 0.984, which is higher than 0.5. So, the null of Levene's test holds and concludes that the variance in the Actual Reliability of males is not different than that of females. This tells us that we should look at the "Equal variances assumed" row for the *t* test (and corresponding confidence interval) results.

The Sig. (2-Tailed) value in our result is 0.543. This value is higher than .05. Because of this, we can conclude that population means are equal and there are no differences between the two groups

4.4.3 Responsiveness

Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Responsiveness EM	Equal variances assumed	1.287	.262	2.473	52	.017	.34304	.13874
	Equal variances not assumed			2.566	50.290	.013	.34304	.13370
Responsiveness AM	Equal variances assumed	.002	.962	.202	52	.840	.05185	.25617
	Equal variances not assumed			.203	45.893	.840	.05185	.25520

Table 10: Responsiveness and Levene's test

Expected- The p value of the Levene's test is 0.262, which is very small, so the null of Levene's test is rejected and conclude that the variance in Expected Responsiveness of males is significantly different than that of females. This tells us that we should look at the "Equal variances not assumed" row for the *t* test (and corresponding confidence interval) results.

The Sig. (2-Tailed) value in our result is 0.013. This value is less than .05. Because of this, we can conclude that there is a statistically significant difference between the mean number of expected responsiveness of male and female groups.

Actual- the p value of the Levene's test is 0.962, which is higher than 0.5. So, the null of Levene's test holds and concludes that the variance in the Actual Responsiveness of males is not different than that of females**.** This tells us that we should look at the "Equal variances assumed" row for the ***t*** test (and corresponding confidence interval) results**.**

The Sig. (2-Tailed) value in our result is 0.840. This value is higher than .05. Because of this, we can conclude that population means are equal and there are no differences between the two groups.

4.4.4 Empathy

Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Empathy EM	Equal variances assumed	.978	.327	1.829	52	.073	.37102	.20280
	Equal variances not assumed			1.948	51.933	.057	.37102	.19046
Empathy AM	Equal variances assumed	1.984	.165	.158	52	.875	.03807	.24050
	Equal variances not assumed			.165	50.657	.870	.03807	.23088

Table 11: Empathy and Levene's test

Expected- The p value of the Levene's test is 0.327, which is higher than 0.05, so the null of Levene's test holds and conclude that the variance in Expected Empathy of males is not different than that of females**.**

The Sig. (2-Tailed) value in our result is 0.073. This value is higher than 0.05. Because of this, we can conclude that there is no statistically significant difference between the mean number of expected empathy of male and female groups.

Actual- The p value of the Levene's test is 0.165, which is higher than 0.05. So, the null of Levene's test holds and concludes that the variance in the Actual Empathy of males is not different than that of females**.** This tells us that we should look at the "Equal variances assumed" row for the ***t*** test (and corresponding confidence interval) results**.**

The Sig. (2-Tailed) value in our result is 0.875. This value is higher than .05. Because of this, we can conclude that population means are equal and there are no differences between the two groups.

4.4.5 Assurance

Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Assurance EM	Equal variances assumed	3.317	.074	1.747	52	.087	.24290	.13904
	Equal variances not assumed			1.890	51.823	.064	.24290	.12854
Assurance AM	Equal variances assumed	1.660	.203	-.621	52	.538	-.15294	.24643
	Equal variances not assumed			-.582	35.042	.564	-.15294	.26259

Table 12: Assurance and Levene's test

Expected- The p value of the Levene's test is 0.074, which is higher than 0.05, and it can be concluded that the assumption of equal variances holds. The variance in Expected Assurance of males is not different than that of females**.**

The Sig. (2-Tailed) value in our result is 0.087. This value is higher than 0.05. Because of this, we can conclude that there is no statistically significant difference between the mean number of expected Assurance of male and female groups.

Actual- The p value of the Levene's test is 0.203, which is higher than 0.5. So, the null of Levene's test is accepted and concluded that the variance in the Actual Assurance of males and females are the same**.** This tells us that we should look at the "Equal variances assumed" row for the ***t*** test (and corresponding confidence interval) results**.**

The Sig. (2-Tailed) value in our result is 0.538. This value is higher than .05. Because of this, we can conclude that population means are equal and there are no differences between the two groups

4.5 ANOVA test among 3 age groups

ANOVA

		Sum of Squares	df	Mean Square	F	sig.
Mean Expected Tangibility	Between Groups	1.043	2	.522	2.467	.095
	Within Groups	10.570	50	.211		
	Total	11.613	52			
ReliabilityEM	Between Groups	1.313	2	.657	2.440	.097
	Within Groups	13.457	50	.269		
	Total	14.770	52			
ResponsivenessEM	Between Groups	.966	2	.483	1.801	.176
	Within Groups	13.416	50	.268		
	Total	14.382	52			
EmpathyEM	Between Groups	3.670	2	1.835	3.549	.036
	Within Groups	25.850	50	.517		
	Total	29.520	52			
AssuranceEM	Between Groups	.903	2	.451	1.755	.183
	Within Groups	12.859	50	.257		
	Total	13.762	52			
TangibleAM	Between Groups	.732	2	.366	.482	.620
	Within Groups	37.966	50	.759		
	Total	38.698	52			
ReliabilityAM	Between Groups	4.076	2	2.038	2.986	.060
	Within Groups	34.124	50	.682		
	Total	38.200	52			
ResponsivenessAM	Between Groups	2.909	2	1.455	1.777	.180
	Within Groups	40.937	50	.819		
	Total	43.847	52			
EmpathyAM	Between Groups	4.501	2	2.251	3.259	.047
	Within Groups	34.531	50	.691		
	Total	39.032	52			
AssuranceAM	Between Groups	2.554	2	1.277	1.641	.204
	Within Groups	38.919	50	.778		
	Total	41.473	52			

Table 13: Anova test within age groups

Results show that there is a significant difference in the empathy dimension between different age groups. However, in other dimensions – tangibility, reliability,

responsiveness, and assurance – there is no significant difference between different age groups.

5 CONCLUDING DISCUSSION

5.1 Summary

This study presents a comprehensive overview of the service gap in online services provided by Banks in Finland. Each of the four chapters explains the subject relevant to the topic. Chapter two designates research design, a detailed presentation of research objectives, research questions, hypothesis and research method. Chapter three designates solid theoretical background which clarifies Finnish banks, customer satisfaction, theoretical parts about different customer satisfaction models and internet banking changing scenario of Finland over 20 years. This chapter clearly describes leading Finnish banks, online banking services, bank's customers, why online banking is becoming popular, methods and tools of using online banking services. Chapter four describes detailed results from respondents using Excel and SPSS. Different figures and statistical tools (cross-tabulation, reality test, t-test, ANOVA) are used to analyse responses from the respondents.

5.2 Conclusion

After a detailed analysis from this thesis, some major findings can be enlisted in the conclusion part. From the secondary data analysis of this study, it is found that customer of online banking is increasing in Finland. Finnish online banking customers are familiarizing themselves with the changing process. Within the last five years, customers have become used to the mobile payment system or mobile wallet system. Most of the youth use bank wallet to pay even for their food. Over the past 20 years, there have been radical changes in Finnish banking services because of digitalization. Over 4.9 million, which is 89.02% of the total population in Finland, used the internet in 2018. About 90% of the people are using the internet in Finland in 2019 and it is expected that 97.5% of the people will use the internet within 2024 (statista, 2019). Different software apps such as EBANQ is under process to be included in Finnish banking services. This is an "out of the box" solution for payment institutions, Trust companies, Electronic Money Institutions, Credit Union, Asset Managers, Forex Companies, and Cryptocurrency Exchanges. In a word this app is a solution for anyone who manages client funds

(EBANQ, 2019). The goal of the Finnish online banking industry is to make every process completed online with a minimum complication for everyone. Payment systems are merging with mobile to make it more secure and trustworthy.

From primary data analysis, answer to the research questions 1) What are the gaps between customers' expectations and perceived online service quality provided by banks in Finland and 2) What is the perception of online service quality delivered by the Finnish bank are sought.

It is found that there is a gap between customer expectation and perception (actual service experience) among the users of online bank services in Finland. However, it can be said with confidence that the gap is standard for both male and female users. The expectation level belongs to six scales (Agree) and their experience belongs to five scales (More or less agree) on average point. So, it can be concluded that the perception of online Finnish banking services is upright. Both male and female respondents are contented with current services and this outcome also supports secondary data analysis findings. However, this perception may vary among people of different age groups. This assumption cannot be proved from this thesis because the participation of evenly distributed age groups could not be ensured.

From the results of Levene'e test, it is found that male respondents have higher expectations than female respondents in the area of tangibility, reliability, and responsiveness. The other 2 areas- assurance and empathy have similar responses from both males and females. Tangibility, reliability, and responsiveness have a strong functional aspect. However, assurance and empathy indicate more emotional aspect of service. The reason for the higher expectation for males in these areas couldn't be understood from this thesis. The reason can be psychological differences between men and women, or it can be a social trigger. However, continuous improvements in online banking service suggest that the responsible organizations are working towards a more functioning online banking environment

5.3 Limitation of the study

Like any other research, this study has some limitations which were not possible to overcome. First, the number of respondents was not enough. It was not possible to reach

enough respondents within the assigned time. Second, most of the respondents belong to the age group 19-20 and 21 -30 who are young generation. It is assumed that if there were equal numbers of the respondent in different groups that would have given a more appropriate result. Third, the analysis of this research is done on the Gap model (SERVQUAL) only. This gap model considers tangibility, reliability, responsiveness, empathy, and assurance to measure the gap between expectation and perception which ultimately consider the result of customer satisfaction level. There are some other factors like, price, the behavior of banks, etc. can also lead to customer satisfaction which are not considered in this analysis.

5.4 Suggestions for further study

There is a vast scope to perform further studies on this topic. In the future, an interested researcher can continue this study with enough respondents from different age groups. This study can be done region-wise (Helsinki, Turku or Tampere). Apart from the Gap model, the United theory of Acceptance and Use of Technology 2 (UTAUT) model can be used to achieve a more reliable result.

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